IN THE CLAIMS:

1. (Previously Presented) A method of fabricating a radiation detector array comprising the steps of:

a) providing on one face of a layer of material, an array of detector elements each including a material which absorbs the radiation;

b) forming an array of cavities in the layer of material such that each detector is positioned at the base only of a cavity, the cavities having reflective walls for reflecting radiation onto the detectors; and

c) bonding the array of cavities and detectors to a silicon integrated circuit including a corresponding array of amplifiers and multiplex switches.

2. (Original) A method as claimed in claim 1 in which the layer of material is a silicon wafer and the cavities are formed by etching the wafer.

3. (Original) A method as claimed in claim 2, in which the etching process is deep reactive ion etching.

4. (Original) A method as claimed in claim 1 in which a profiled polymer mask is used to define the array of cavities.

5. (Original) A method as claimed in claim 1 comprising the further step of at least partially coating the cavities with metal.

6. (Original) A method as claimed in claim 5, in which the metal is sputtered onto the cavities.

7. (Original) A method as claimed in claim 5, in which the metal is evaporated onto the cavities.

8. (Original) A method as claimed in claim 1 including the further step of wholly or partially filling the cavities with dielectric material of refractive index higher than air.

9. (Previously Presented) A method of fabricating a radiation detector array comprising the steps of:

a) forming in a layer of material an array of cavities having walls which reflect the radiation towards the bases of the cavities;

b) providing, on one face of the material, an array of detector elements, each including a material which absorbs the radiation, such that one element is positioned at the base only of each cavity; and

c) bonding the array of cavities and detectors to a silicon integrated circuit including a corresponding array of amplifiers and multiplex switches.

10. (Original) A method as claimed in claim 9 in which the layer of material is a silicon wafer and the cavities are formed by etching the wafer.

11. (Original) A method as claimed in claim 10, in which the etching process is deep reactive ion etching.

12. (Original) A method as claimed in claim 9 in which a profiled polymer mask is used to define the array of cavities.

13. (Original) A method as claimed in claim 9 comprising the further step of at least partially coating the cavities with metal.

14. (Original) A method as claimed in claim 13, in which the metal is sputtered onto the cavities.

15. (Original) A method as claimed in claim 13, in which the metal is evaporated onto the cavities.

16. (Original) A method as claimed in claim 9 including the further step of wholly or partially filling the cavities with dielectric material of refractive index higher than air.

17. (Previously Presented) A radiation detector array comprising an array of radiation collector cavities formed in a layer of material, the cavities having walls which reflect the radiation; and an array of detector elements on one face of the layer of material arranged with an element at the base only of each cavity, the elements including a material which absorbs the radiation; wherein the array of cavities and detectors is bonded to a silicon integrated circuit including a corresponding array of amplifiers and multiplex switches.

18. (Original) An array as claimed in claim 17, in which the detector elements are infrared detector elements.

19. (Original) An array as claimed in claim 17 in which the cavities are shaped so as to have a gradually reducing cross sectional area from their openings towards their bases.

20. (Original) An array as claimed in claim 19, in which the cavities are conical.

21. (Original) An array as claimed in claim 19, in which the inner surfaces of the cavities are parabolic in shape.

22 . (Original) An array as claimed in claim 21, in which the detectors are positioned at the foci of the parabolas.

23. (Original) An array as claimed in claim 17 wherein the pyroelectric detectors are made from a thin film of a material that is substantially lead zirconate titanate.

24. (Original) An array as claimed in claim 17 wherein the detectors are made from a thin film of a material that is substantially lead scandium tantalite.

25. (Original) An array as claimed in claim 17 wherein the detectors are made from a thin film of a material that is substantially a copolymer of polyvinylidene fluoride and trifluoroethylene.

26. (Original) An array as claimed in claim 17, wherein the array is bonded using conductive bumps are made of silver loaded epoxy.

27. (Original) An array as claimed in claim 17 wherein the array is bonded using conductive bumps made of solder.

28. (Original) An array as claimed in claim 17 wherein the array is bonding using conductive bumps made of electroplated gold.

29. (Original) An array as claimed in claim 17, wherein the cavities are at least partially coated with metal.

30. (Original) An array as claimed in claim 17 wherein the cavities are each provided with a lens to improve the angular collection efficiency.

31. (Original) An array as claimed in claim 17 wherein the cavities are wholly or partially filled with a dielectric material of higher refractive index than air.

32. (Original) An array as claimed in claim 30 wherein the cavities are wholly or partially filled with a dielectric material of higher refractive index than air and the material wholly or partially filling the cavities is the same as the lens material.

33. (Original) An array as claimed in claim 17 wherein the detector elements are each provided with a thin film absorber.

34. (Original) An array as claimed in claim 17, wherein the absorber comprises a thin film of silicon dioxide coated with a thin layer of metal.

35. (Original) An array as claimed in claim 1 in which the detector elements are pyroelectric detector elements.